ACC NR: AM6036118 (A) Monograph UR/

Gurevich, Viktor Zalmanovich

Hot light (Teplyy svet) Moscow, Izd-vo "Nauka", 1966, 115 p. illus., biblio. 19,000 copies printed.

Series note: Akademiya nauk SSSR. Nauchno-populyarnaya seriya

TOPIC TAGS: infrared-sensor, IR radiation, heat radiation, light radiation

PURPOSE AND COVERAGE: This is a popular science book dealing with infrared light. Included in the description are the properties of this light and how it is used by man. The time will come when scientists will uncover the mystery of infrared systems which exist in nature. Heat sensors are used by man at night to "see" various objects such as an airplane, a building, or a man. The author's intention is to help the reader to understand the nature and practical applications of infrared radiation. There are 12 references, all Soviet.

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UDC: NONE

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ACC NR: AM6036118

SUB CODE: 17,20,14/ SUBM DATE: 11Apr66/ ORIG REF: 011/

Card 2/2

GUREVICH, Ya.A.

Evolution of magnetic cores for high-frequency operation. Radiotekhnika 20 no.2:56-61 F '65. (MIRA 18:4)

PROCESSES AND PROPERTIES INDEX

The electrodeposition of lead. P. P. Belyaev and Ya. B. Gurevich. *J. Chem. Ind.* (Moscow) **13**, 612 (1936); cf. *C. A.* **30**, 6859.—Practical details are given for the deposition of Pb from a soln. of $PbSiF_6$. H. M. L.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

1

Experiments with chemically resistant coatings in the Dorogomilov chemical works. Ya. B. Gurevich. *Org. Chem. Ind.* (U. S. S. R.) 7, 330-7(1940); *Chem. Zentr.* 1941, I, 120.—The metal surfaces were sand-blasted, then washed with benzene. Crude rubber was applied with special rolls, and vulcanized at 65°. A layer of Faolite up to 10 mm. was applied at 100-80°, with bakelite as an adhesive. The pressures used were 0.2-0.5 kg. per sq. cm.; higher pressures are to be avoided. The polymerization was effected in an oven in a period of 54 hrs. The coatings thus produced are resistant and durable. M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

GUREVICH, Ya.B.

NAYMARK, V.Ye., kand.fiz.-mat.nauk; GUREVICH, Ya.B., kand.tekhn.nauk

Plastic properties of Kh25N20 modified steel c..tings. Probl. metalloved. i fiz. met. no.4:623-638 '55. (MIRA 11:4)
(Steel castings) (Plasticity)

GUREVICH, Ya.B., kand.tekhn.nauk; NAYMARK, V.Ye., kand.fiz.-mat.nauk

Deformability of Kh25N20 steel castings. Probl. metalloved. i fiz. met. no.4:639-647 '55. (MIRA 11:4)
(Steel castings) (Rolling (Metalwork))

Gurevich, Ya. B.

USSR/Solid State Physics - Mechanical Properties of Crystals And Polycrystalline Compounds. E-10

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11905

Author : Gurevich, Ya.B.

Inst : Central Scientific Research Institute for Ferrous Metallurgy, USSR.

Title : Character of the Yield Point in Tension.

Orig Pub : Fiz. metallov i metallovedeniye, 1956, 2, No 1, 137-141

Abstract : Steel (0.45% carbon) molten in an open high frequency furnace and in a vacuum, was forged and annealed at 780°. In micro-mechanical tests for tension of specimens 1 mm in diameter, it was observed that in the case of vacuum melting, the yield area was more than 2.5 times longer than in the case of open melting. In the case of vacuum melting one observes an increase in the relative elongation

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Card 2/2

GUREVICH, Ya.B., kandidat tekhnicheskikh nauk.

Anisotropy of the mechanical properties of steel ingots smelted and cast in vacuum. Stal' 16 no.9:815-817 S '56. (MIRA 9:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.
(Steel ingots--Testing)

AUTHOR: Gurevich, Ya.B., Leont'ev, V.I. and Teumin, I.I.

TITLE: The influence of ultrasonics on the structure and properties of a steel ingot. (Vliyaniye ul(trazvuka na struktura i svoystva stal'nogo slitka). 133-5-5/27

PERIODICAL: "Stal'" (Steel), 1957, No.5, pp. 406-411 (U.S.S.R.)

ABSTRACT: A laboratory investigation of the above problem was carried out on steels X27 and X25H20 using a specially developed magnitostriction vibrator (Fig. 1) as an ultrasonic source (18 kc). The weights of ingots up to 2 kg. The influence of ultrasonics on the structure of ingots is shown in Figs. 2-7. A considerable improvement in micro-and macrostructures of ingots was obtained. Linear dimensions of grains decreased 3-5 times, acicular crystals practically disappeared, non-metallic inclusions somewhat decreased in size and were evenly distributed and dendritic segregation was decreased. A comparison of the chemical composition and mechanical properties of steel specimens cut from ingots (Fig. 8) cast with and without ultrasonic vibrations are given in Tables 1-3 and Figs. 9-11. Mechanical properties and the deformability of specimens cast with the use of ultrasonics were improved probably due to an improvement in structure of the cast metal as the chemical composition and the gas content remained practically unchanged.

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The influence of ultrasonics on the structure and properties of a steel ingot. (Cont.)

133-5-5/27

Diffusion annealing of the cast metal and an 80% hot deformation (in the case of steel X27) did not remove the positive effect of ultrasonics only a decrease in their initial effect was observed. There are 3 tables, 11 figures and 11 references, including 8 Slavic.

ASSOCIATION: TsNIIChM.

AVAILABLE:

Card 2/2

133-58-5-19/31

AUTHORS: ~~Gurevich, Ya. B.~~, Candidate of Technical Science and
Neymark, V. Ye, Candidate Phys-Mathematical Science

TITLE: The Production of Seamless Tubes from Cast Bushings Obtained by the Vacuo-Crystallisation Method (Izgotovleniye besshovnykh trub iz litykh gil'z, poluchennykh metodom vakuum-kristallizatsii)

PERIODICAL: Stal', 1958, Nr 5, pp. 446-448 (USSR)

ABSTRACT: The possibility of producing thin walled seamless tubes from some difficult to deform steels by rolling bushings cast in vacuo was investigated. The method of casting bushings was that described in Ref.2. Experiments were carried out with steels Kh16N25M6, Kh16N19M3T and Kh25N20. Hot rolling of dressed (by machining) bushings was carried out on the mill 360 TsNIIChM. The temperature of metal was varied from 1200-800°C, the degree of reduction from 10 to 40% and the velocity of rolling from 0.7 to 3.5 m/sec. For the successful rolling of steel Kh25N20 the following conditions should be observed: a) cast bushings should not vary in transverse thickness (above 40%) and should not have coarse defects on the surface; b) cast metal should be submitted to diffusion

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133-58-5-19/31

The Production of Seamless Tubes from Cast Bushings Obtained by the Vacuo-Crystallisation Method

annealing in order to destroy sigma-phase and decrease dendritic liquation, usually strongly developed in austenitic steels; c) optimum hot rolling temperature 1160-1120°C (at higher temperatures deep cracks are formed particularly on the internal surface and in the temperature range 1100-800°C the quality of tubes deteriorates as well as the resistance to deformation sharply increases); d) on rolling according to the continuous type of mill, individual reduction in a pass should not exceed 15% and the total reduction 50%; on rolling according to the automatic type of mill 12% and 40% correspondingly; e) the velocity of rolling should not exceed 1.7 m/sec. Hot rolled tubes were dressed, annealed at 1100° with subsequent cooling in water and cold rolled or drawn with satisfactory results. However, the above technology of production presents many difficulties and therefore a direct cold rolling of cast thin-walled bushings was tested. The following steels were tested Kh25N20, 1Kh18N13B, Kh19N28M3D4 and Kh23N23M3D3 (the latter two steels could not be hot rolled). Machined bushings were

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133-58-5-19/31

The Production of Seamless Tubes from Cast Bushings Obtained by the Vacuo-Crystallisation Method

thermally treated (heating to 1250, half-hour soaking, cooling in air) and cold rolled. After each rolling thermal treatment was repeated (heating to 1150°C, half-hour soaking, cooling in water). The first rolling should be carried out with a reduction not exceeding 20% and a velocity up to 2.5 m/min. It was also found that rolling can be done without preliminary machining of bushings providing their surface is satisfactory. It is pointed out that for the industrial application of the above technology, further improvement in the quality of cast bushings and their more efficient dressing is necessary.
There are 2 figures and 7 references, all of which are Soviet.

Card 3/3

36424

S/137/62/000/003/021/191
A006/A101

18.1151

AUTHORS: Gurevich, Ya. B., Leont'yev, V. I., Teumin, I. I.

TITLE: The effect of elastic oscillations during crystallization upon the structure, mechanical properties and deformability of grade X27 (Kh27) and X25H20 (Kh25N20) steels

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 43-44, abstract 3V267 ("Sb. tr. In-t metalloved. i fiz. metallov Tsentr. n.-i. in-ta chernoy metallurgii", 1959, v. 6, 117-136)

TEXT: The authors investigated changes in the macrostructure, mechanical properties and deformability of grade Kh27 and Kh25N20 steel. Ingots of these steels were subjected to the effect of elastic oscillations of ultrasonic frequency on a machine developed by TsNIIShM. These steels are prone to the formation of a coarse granular structure, predetermining low mechanical properties, in particular low ductility and a_k of Kh27 steel at room temperature, and low ductility and strength of Kh25N20 steel at high temperatures. Ingots weighing 700 - 900 g, 35 - 40 mm in diameter and 75 - 80 mm high, were subjected to ultrasonic treatment on the machine. All the ingots were melted from the same

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charge under equal conditions and were cast at 1,560 - 1,570°C. At this temperature the ingots produced without ultrasonic treatment showed a columnar coarse-grained macrostructure. After solidifying and cooling the ingots were cut alongside into halves. One half was investigated in cast state, the other one after diffusion annealing at 1,200 - 1,250°C for one hour with subsequent air cooling. After investigating the macrostructure, both halves of the ingots were cut into blanks, from which specimens were prepared for micro-investigation, determination of the chemical composition and gas content, mechanical tests and rolling. It was established that ultrasonic treatment of crystallizing ingots causes considerable refining of the structure. The linear dimensions of the grains are reduced by a factor of 3 - 5 as compared with grains of ingots which had not been ultrasonic-treated. The columnar crystals are almost fully absent, and consequently, the usual zonality in the ingot is absent, too. The size of non-metallic inclusions decreases and their distribution becomes more uniform, whilst in ingots which had not been treated by the ultrasonic method, the inclusions are arranged in the form of considerable accumulations or chains. In Kh25N20 steel subjected to ultrasonic treatment, the dendrite segregation is much less pronounced. Mechanical properties and deformability of Kh27 and Kh25N20 steels are improved as a result of ultrasonic treatment during crystalli-

zation of the ingot. At room temperature the ductility and deformability of Kh27 steel increases to a particularly high degree. The authors point to the stability of the mechanical properties practically over the whole volume of the ingot whilst in such ingots which had not been ultrasonic treated the heterogeneity of properties is clearly marked. The chemical composition and the gas content did practically not change. Diffusion annealing of the cast metal and hot deformation do not eliminate the positive effect of ultrasonic treatment which is then only less pronounced. There are 12 references.

G. Lyubimova

[Abstracter's note: Complete translation]

GUREVICH, Ya.B., kand.tekhn.nauk; NEYMARK, V.Ye., kand.fiz.-mat.nauk

Selecting conditions of deforming cast EI530 and EI533 steel. Probl.metalloved.i fiz.met. no.6:527-536 '59. (MIRA 12:8)
(Steel alloys--Testing) (Deformations (Mechanics))

18.5100

75963
SOV/133-59-10-24/39

AUTHORS: Gurevich, Ya. B., Zubko, A. M.

TITLE: Concerning the Coefficient of Friction and Specific Pressure in Hot-Rolling Under Vacuum

PERIODICAL: Stal', 1959, Nr 10, pp 929-931 (USSR)

ABSTRACT: Initial tests concerned the determination of the coefficient of friction and resistance to deformation in hot-rolling under vacuum. The experimental part of the work was carried out by Rudenko, V. A., and Shashkova, V. N. The coefficient of friction was analytically determined by the value of the forward slip which was, in turn, established by means of center punch indentations. Total pressure (P) was divided by the surface of the contact of the metal with roll (F) to obtain the resistance to deformation; i.e., specific pressure during rolling (p): p = P/F. Research conducted by radiographic method (Zemskiy, S. V., of Central Scientific Research Institute of Ferrous Metallurgy (TsNIIChM)) on carbon distribution in iron and nickel

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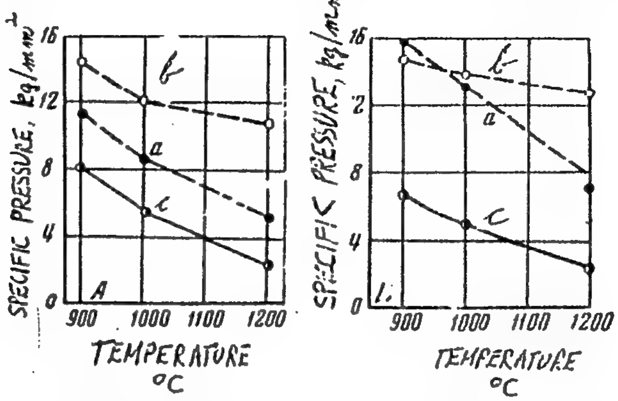

Fig. 3. Dependence of specific pressure in rolling under vacuum: (a) 10^{-2} mm Hg column and (b) 10^{-5} mm Hg column and in (c) regular rolling on temperatures: A, iron; B, nickel.

as well as sulfur in Kh27-type steel after 4-step heating at 1,150° C and regular rolling revealed an almost carbon-free surface of the nickel specimen.

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Concerning the Coefficient of Friction and Specific Pressure in Hot-Rolling Under Vacuum

75963
SOV/133-59-10-24/39

The carbon concentration gradually increased, reaching its initial value at 2 mm depth. After vacuum rolling the carbon content on the surface somewhat exceeded the initial content. Ostensibly, an increased concentration of carbon should reduce the coefficient of friction during rolling [Ref 3]. However, the absence of scale has a greater effect than the slight increase in the quantity of carbon which promotes resistance to deformation during rolling. Although results are only preliminary they show that hot-rolling under vacuum is accompanied by increased coefficient of friction and resistance to deformation. One of the causes is, evidently, the redistribution of some elements observed at high temperatures and during deformation under vacuum. There are 4 figures and 4 Soviet references.

ASSOCIATION: Central Scientific Research Institute of Ferrous Metallurgy (TsNIIChM)

Card 3/3

GUREVICH, YA.B

PHASE I BOOK EXPLOITATION SOV/4548

Akademiya nauk SSSR. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali

Primeneniye vakuuma v metallurgii (Use of Vacuum in Metallurgy) Moscow, Izd-vo AN SSSR, 1960. 334 p. Errata slip inserted. 4,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A.A. Baykova. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali.

Resp. Ed.: A.M. Samarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: G.M. Makovskiy; Tech. Ed.: S.G. Markovich.

PURPOSE: This collection of articles is intended for technical personnel interested in recent studies and developments of vacuum steelmaking practice and equipment.

COVERAGE: The book contains information on steel melting in vacuum induction furnaces, and vacuum arc furnaces, reduction processes in vacuum, and degassing of steel and alloys. The functioning of apparatus and equipment, especially vacuum furnaces and vacuum booster pumps is also analyzed. Personalities are mentioned in connection with some of the articles and will appear in the Table of Contents. Three articles have been translated from English. Some of the

AVAILABLE: Library of Congress

14

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S/180/61/000/002/002/012
E073/E535

1.1300 4

AUTHORS: Pavlov, I.M., Siglov, Yu.M., Shelest, A.Ye., Zubko, A.M. and Gurevich, Ya.B. (Moscow)

TITLE: Investigation of the Process of Hot Rolling of Aluminium in Vacuum and in Air

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.2, pp.64-67

TEXT: The influence on the friction coefficient of scale or an oxide film layer on the surface of a metal being rolled has been the subject of numerous papers. However, no direct comparison was made of the ordinary process of rolling aluminium in air and in vacuum. Such a comparative study will permit direct elucidation of the influence of oxide films on the conditions of rolling. The authors investigated the power consumption, the speed and deformation conditions and the friction coefficient during hot rolling of aluminium in vacuum and in air. The rolling was on TsNIIChermet laboratory vacuum equipment permitting heating, rolling and cooling of 15 x 20 mm, 200 mm long specimens in a vacuum down to 10^{-5} mm Hg. From a forged and annealed blank 150 x 10 x 12 mm

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specimens were cut. These were heated in a tubular electric furnace. The heating temperature was maintained within ± 15°C. Rolling was at 400°C with reductions of 20 to 70% per pass. The diameter of the rolls was 85 mm, the rolling speed 6.5 m/min. The rolls were of steel ШХ-15 (ShKh-15) (hardness 55 R_c) and had a polished surface. The pressure was measured by wire strain gauges. Fig.1 shows a typical oscillogram in which 1 is the torque on the top spindle, 2 and 5 - pressure measured by the strain gauges, 3 - recorded roll speed, 4 - recorded strip speed, 6 - torque on the lower spindle, 7 - oscillation curve (500 c.p.s.). Fig.2 shows the dependence of the broadening $\gamma = B_2/B_1$, % on the relative reduction $\Delta B/\Delta h$, where H, B_1 and L_1 are respectively the height, width and length of the specimens before rolling and h, B_2 and L_2 are respectively the height, width and length after rolling, $\Delta B = B_2 - B_1$ and $\Delta h = H - h$. (Here and in the following plots the dashed line curve refers to results obtained in vacuum and the continuous line curve refers to results obtained in air). Fig.3 shows the lead S_h as a function of the broadening,

whereby

$$S_h = \frac{L_{strip} - L_{roll}}{L_{roll}} \qquad (1)$$

where L_{strip} is the distance between the markings on the strip and L_{roll} is the distance between corresponding markings on the roll. Fig.4 shows the dependence of the specific pressure P, kg/mm^2 on the broadening ψ, %. Fig.5 shows the friction coefficient f' as a function of ψ,%. Fig.6 shows the torque M, kgm as a function of ψ,%. It was found that the friction coefficient and the required force, which depends directly on the friction coefficient, for vacuum hot rolling of titanium, grade ВТ-1 (VT-1), is considerably lower than for rolling in air, whilst for nickel and iron (C - 0.01%) it is higher in the same way as it is for Al. This again confirms the dependence of these quantities on the chemical composition of the rolled metal. The following conclusions are arrived at:

1. It was established that for Al the coefficient of friction

during rolling in vacuum is higher than for rolling in air, whereby the greatest difference (by a factor of about 1.4) was observed for smaller reductions;
2. it was confirmed that the friction coefficient during rolling decreases with increasing specific pressure both in air and in vacuum. There are 6 figures and 7 references: all Soviet.

SUBMITTED: August 8, 1960

Fig.1

26582

S/148/61/000/006/006/013
E073/E535

1.1300 also 1496 1416 1413

AUTHORS: Pavlov, I.M., Sigalov, Yu. M., Shelest, A.Ye., Zubko, A.M. and Gurevich, Ya. B.

TITLE: Investigation of some conditions of hot rolling of titanium in vacuum and in air

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1961, No.6, pp.106-110

TEXT: The authors investigated the force, velocity and deformation conditions during the process of rolling of titanium in vacuum and compared the results with similar results obtained for rolling in air. This was done to elucidate the influence of the scale on the friction coefficient, specific pressure and other parameters of the rolling of commercially pure titanium. From a pre-forged blank, specimens 15 x 20 mm, 200 mm long were cut. Those specimens which were to be rolled in vacuum (3×10^{-5} mm Hg) were heated in a small-chamber electric furnace with molybdenum heater filaments; those to be rolled in air were heated in an electric furnace with nichrome heater filaments. The specimens were rolled in the temperature range 800-1200°C on a two-high mill

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with rolls of 85 mm diameter. The average reduction was 20%, the speed of rolling was 6.5 m/min. The rolls had a ground surface with a hardness of 55 RC. The rolling parameters, i.e. the total pressure, the torque, the speed of the rolled strip and the circumferential speed of the rolls were recorded by means of an 8-loop oscillograph. Fig.3 shows the dependence of the friction coefficient f''' and of the specific friction force τ_s, kg/mm^2 on the rolling temperature, °C. Fig.4 shows the dependence of the friction coefficient f' and of the forward slip S_h on the rolling temperature, °C. Fig.5 shows the dependence of the specific pressure, kg/mm^2, on the rolling temperature, °C. Fig.6 gives the dependence of the specific pressure, kg/mm^2, and the friction coefficient f' on the reduction, %. In all these graphs the continuous line curves apply to rolling in air and the dashed line curves to rolling in vacuum. In the paper the authors apply three differing friction coefficients, one f''' determined according to the formula of S. I. Gubkin (Ref.12: Theory of shaping metals by pressure, Metallurgizdat, 1947), another f'' determined on the basis of the theoretical formula for the torque, proposed by

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000617420019-1"

26582

Investigation of some conditions ...S/148/61/000/006/006/013
E073/E535

V. Bayukov and the third, f', determined from the value of the forward slip. The following conclusions are arrived at:
1. In all cases of rolling in air the curve expressing the dependence of the friction coefficient on the temperature has a convex-shaped section with a maximum in the temperature range 1050-1150°C. If titanium is rolled in air at 800-1100°C, a dense layer of titanium dioxide scale forms which leads to an increase in sliding friction coefficient and spreading. At rolling temperatures above 1100°C, a dense layer of scale of a fine grain structure forms which peels off easily from the base metal and leads to a reduction of the friction coefficient; the friction coefficients f' and f" are similar and their values are very near to each other. When rolling was performed in vacuum, the friction coefficient was considerably lower and showed a tendency to increase with increasing rolling temperature. This is attributed to a drop in the specific pressure with a minimum effect of other factors.
2. Changes in the specific pressure p and the specific friction force τ_s were similar during rolling in vacuum and in air. The

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Investigation of some conditions ... S/148/61/000/006/006/013
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values p and τ_s, and consequently also the torque, are affected by the sudden α to β transformations and this explains the sharp drop in the friction coefficient, forward slip and the slight increase in spreading in the temperature range 850-950°C.
3. With increasing reduction an increase is observed in the specific pressure and a decrease in the friction coefficient.
4. The experiments revealed considerable qualitative and quantitative differences in the force, velocity and geometrical factors pertaining to rolling titanium in vacuum and in air. Experiments carried out earlier by some of the authors (Ref.14: Stal', 1959, No.10, 929-931) yielded differing results, namely, the coefficient of friction and the geometrical and force conditions depending on it were considerably higher in vacuum than in air in the case of rolling pure iron with a carbon content of 0.01%. This clearly indicates that the investigated quantities depend on the chemical composition of the rolled metal. There are 6 figures and 14 references: 13 Soviet and 1 non-Soviet.

ASSOCIATION: Institut metallurgii imeni A.A. Baykova (Institute of Metallurgy imeni A. A. Baykov)

Card 4/6

GUREVICH, Ya. B. (Moskva); ZUBKO, A.M. (Moskva); PAVLOV, I.M. (Moskva); SIGALOV, Yu.M. (Moskva)

Effect of the state of specimen surfaces on the coefficient of friction and other parameters during the rollings of iron in vacuum. Izv. AN SSSR. Otd. tekh. nauk. Met. i topl. no.2:144-145 Mr-Ap '61. (MIRA 14:4)

(Rolling(Metalwork))
(Friction)

1.1300

3.8700
S/598/62/000/007/027/040
D217/D307

AUTHORS: Pavlov, I. M., Sigalov, Yu. M. and Gurevich, Ya. B.

TITLE: Study of the process of hot rolling titanium in vacuo and in air

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splavy. no. 7, Moscow, 1962. Metallokhimiya i novyye splavy, 197-203

TEXT: In order to study the influence of scale formed on the surface of the metal during heating on the coefficient of friction, specific pressure, expansion and other parameters of rolling, specimens of commercially pure Ti were heated and rolled in a vacuum of the order to 10^{-5} mm Hg, and in air. The work was carried out at a TsNIIChM laboratory vacuum plant. It was found that in every case of rolling Ti in air, the dependence of the coefficient of friction on temperature is cupola-shaped in character, with a maximum in the temperature range 1050 - 1150°C. The changes in specific pres-

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Study of the process ... S/598/62/000/007/027/040
D217/D307

sure and specific frictional force are identical in nature with air- and vacuum-rolled Ti. On increasing the percentage reduction in area of titanium, the specific pressure increases and the coefficient of friction decreases. There are 8 figures.

Card 2/2

GUREVICH, S.M.; KHARCHENKO, G.K.; GUREVICH, Ya.B.(Moskva)

Electron-beam welding of chromium. Avtom. svar. 15 no.12:56-59 D '62. (MIRA 16:2)

1. Ordena Trudovogo Krasnogo Znameni institut elektrosvarki imeni Ye.O. Patona AN UkrSSR (for Gurevich, S.M., Kharchenko).

(Chromium—Welding)
(Electron beams)

PAVLOV, I.M.; GUREVICH, Ya.B.; ORZHEKHOVSKIY, V.L.; SHELEST, A.Ye.; BASHCHENKO, A.P.

Effect of conditions of titanium heating on the indices of hot rolling. TSvet. met. 35 no.7:75-79 Jl '62.
(MIRA 15:11)

(Titanium)
(Rolling (Metalwork))

S/279/63/000/001/001/023
E193/E383

AUTHORS: Pavlov, I.M., Orzhekhovskiy, V.L., Gurevich, Ya.B. and Shelest, A.Ye. (Moscow)

TITLE: The effect of the roll material and surface finish on some parameters of hot-rolling in vacuum

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i gornoye delo, no. 1, 1963, 14 - 17

TEXT: Cast iron and steel (ШХ15 (ShKh15) and 5Х2В8 (5Kh2V8)) rolls, 85 mm in diameter, were used in the experiments conducted in a vacuum of $\sim 10^{-5}$ mm Hg on steel 20 test pieces, preheated to 1100 °C. Various surface finishes of the rolls, corresponding to class 4, 7 and 10 of the degree of flatness (as specified in ГОСТ (GOST) 2789-59) were obtained by turning, grinding and polishing the rolls. Test pieces with various surface finishes were prepared by grinding, milling or planing in either longitudinal or transverse directions. A constant reduction of 30% per pass was used in the experiments conducted at a rolling speed of 6.5 m/min. The roll pressure, roll torque, peripheral roll speed, forward
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S/279/63/000/001/001/023
E193/E383

The effect of ....

slip and the speed of metal leaving the rolls were measured in each experiment. The lateral-spread coefficient was calculated on the basis of the constant-volume law. The friction coefficients were determined with the aid of a braking device and calculated from data on the forward slip. Some of the typical results obtained on ground test pieces are reproduced in Fig. 4, where the histograms show the variation in (a) friction force τ_s, kg/mm^2, (б) roll pressure P, kg/mm^2, (в) lateral-spread coefficient a, (г) friction coefficient f and (д) forward slip S_h, blocks 1-6 relating to: 1 - ground cast-iron rolls; 2 - turned cast-iron rolls; 3 - polished steel ShKh15 rolls; 4 - ground steel ShKh15 rolls; 5 - ground steel 3Kh2V8 rolls; 6 - turned steel ShKh15 rolls. The general conclusion was that the friction coefficient in hot rolling was affected more by the material and surface finish of the rolls than by the surface condition of the metal rolled. There are 4 figures.

SUBMITTED: July 17, 1962

Card 2/3

S/717/62/000/007/010/010
D207/D302

11720

AUTHOR: Gurevich, Ya.B., Candidate of Technical Sciences

TITLE: Vacuum and inert-gas atmosphere in pressure treatment of metals

SOURCE: Dnepropetrovsk. Institut metallovedeniya i fiziki metallov. Problemy metallovedeniya i fiziki metallov, no. 7, Moscow, 1962, 472 - 497

TEXT: The author describes work on hot-rolling of metals and alloys in vacuum and in an argon atmosphere. The work was done using an experimental plant developed at the Khar'kovskiy fiziko-tekhnicheskiy institut (Khar'kov Physico-Technical Institute). The plant was acquired by the Institut metallovedeniya i fiziki metallov TsNIIChM (Institute of Metallography and Metal Physics, TsNIIChM). It was used for heating, rolling and cooling treatments at temperatures up to 1400°C. The rate of rolling was 6.5 m/min. Temperature was measured with thermocouples and a СПР (SPR) potentiometer. Vacuum down to 5 x 10^{-6} mm Hg was measured with an instrument ВИТ-1 (VIT-1) and argon

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S/717/62/000/007/010/010
D207/D302

Vacuum and inert-gas atmosphere in ...

pressure was found with a U-tube manometer. The following materials were studied: Chromium, iron, nickel, aluminum, titanium, Cr + 40 % Fe, Х19Н28М3Д4 (Kh19N28M3D4) steel, Х16Н19М4В3 (Kh16N19M4V3) steel, and Х27 (Kh27) steel. Hot rolling in vacuum improved the plasticity of brittle materials or those with a limited temperature range of useful plasticity. The coefficients of external friction of iron, nickel and aluminum were higher in vacuum than in air; the coefficients rose on decrease of gas pressure in the vacuum chamber. Resistance to deformation of these metals was therefore higher than in air and this yielded wider strips in hot rolling. Argon at atmospheric pressure was equivalent to 0.1 - 0.001 mm Hg vacuum in the case of iron, nickel and aluminum. Hot rolling and heating in vacuum expelled active gases (particularly nitrogen), sulphur and antimony. These impurities were forced out mainly along grain boundaries and other surfaces of separation. After vacuum heat treatment, both nickel and iron had lower hardness, but higher plasticity and mechanical strength, including yield point, relative to properties of the same materials worked in air. Deformation at room temperature after vacuum heat treatment showed that the latter hardened iron and nickel more

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Vacuum and inert-gas atmosphere in ... S/717/62/000/007/010/010
D207/D302

than treatment in air. Acknowledgements are made to Aspirant of the Institut metallurgii AN SSSR (Institute of Metallurgy, AS USSR), Yu. M. Sigalov, Craftsman of the Laboratory no. 1, V.A. Rudenko, S.V. Zemski from Laboratory no. 6, and N.V. Pervina for their help in experimental work. There are 16 figures, 4 tables and 29 Soviet-bloc references.

Card 3/3

S/509/62/000/009/006/014
D207/D308

AUTHORS: Pavlov, I. M., Sigalov, Yu. M., Gurevich, Ya. B. and Zubko, A. M.

TITLE: Conditions during hot rolling in vacuum of various pressures, in argon and in air

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Trudy, no. 9, Moscow, 1962. Voprosy plasticheskoy deformatsii metalla, 105-108

TEXT: The present work is a continuation of an earlier investigation by Ya. B. Gurevich and A. M. Zubko. The present authors studied the effect of vacuum (10^{-1} - 10^{-5} mm Hg), of pure argon and of air on the coefficient of friction, and on geometrical and force parameters of rolling. The materials subjected to rolling were pure iron and nickel. The rolling tests were carried out at 1100°C at the rate of 6.5 m/min which produced 30% deformation. The rolling mill was of the construction developed at the KhFTI AN USSR (Khar'kov Physico-Technical Institute, AS UkrSSR) which had 85 mm dia-

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meter rolls made of ШХ15 (ShKh15) steel. Vacuum was measured with a ВИТ-1 (VIT-1) gauge. Samples were 150 mm long and 10 x 12 mm in cross-section. The coefficient of friction and the resistance to deformation rose in vacuum on decrease of pressure; in argon the coefficient of friction was the same as an 10^{-1} - 10^{-3} mm Hg vacuum. In air the coefficient of friction was the lowest. There are 2 figures.

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000617420019-1"

S/509/62/000/009/007/014
D207/D308

AUTHORS: Pavlov, I. M., Sigalov, Yu. M., Gurevich, Ya. B. and Zubko, A. M.

TITLE: On the temperature dependence of some hot-rolling parameters in vacuum and in air

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Trudy, no. 9, Moscow, 1962. Voprosy plasticheskoy deformatsii metalla, 109-114

TEXT: The present work is a continuation of an investigation by the authors reported in the preceding paper (pp. 105 - 108 in the present issue). Rolling tests were carried out on pure iron (0.01% C) and nickel at temperatures of 800 - 1200°C using a ЦНИИЧМ (TsNIIChM) rolling mill under the conditions described in the preceding paper. Temperature was measured with a thermocouple and an СПР (SPR) potentiometer. The coefficient of friction of both iron and nickel was lower in air than in 10^{-5} mm Hg vacuum. In air and in vacuum the temperature dependence of the coefficient of friction

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of iron had a maximum at 900°C, but in vacuum the friction passed also through a minimum at 1000°C and then rose with temperature. In the case of nickel the coefficient of friction fell with increase of temperature in vacuum, but in air there was a maximum at 900°C. The resistance of deformation and other rolling parameters varied with the atmosphere and temperature roughly in the same way as did the coefficient of friction. There are 6 figures.

L 12937-63 EWP(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pf-4 JD/HM/HW/JG
ACCESSION NR: AP3002391 S/0279/63/000/003/0123/0126

AUTHOR: Pavlov, I. M. (Moscow); Bashchenko, A. P. (Moscow); Gurevich, Ya. B. (Moscow); Orzhekhovskiy, V. L. (Moscow); Shelest, A. Ye. (Moscow)

TITLE: Dependence of the friction coefficient on temperature and ambient medium in rolling of iron, titanium, molybdenum, and niobium

SOURCE: AN SSSR. Izv. Otd. tekhnicheskikh nauk. Metallurgiya i gornoye delo, no. 3, 1963, 123-126

TOPIC TAGS: hot rolling, vacuum, inert atmosphere, argon, iron, titanium, molybdenum, niobium, friction coefficient, temperature dependence, scale formation

ABSTRACT: The temperature dependence of the friction coefficient in the hot rolling of iron, titanium, molybdenum, and niobium under different conditions has been studied. Specimens were rolled at a constant speed of 6 m/min at a temperature varying from 800 to 1200C in a vacuum, in an argon atmosphere ($0.005\%\ O_2$, 0.01% N), or in the air. Test results showed that with rolling in air the friction coefficient for iron, which is about 0.38 at 800C, increases to a maximum of 0.45 at 900C and then decreases gradually to 0.22 at 1200C.

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L 12937-63
ACCESSION NR: AP3002391

The initial increase is explained by the decreasing resistance of iron to deformation, and the subsequent decrease, by the effect of iron scale, which softens appreciably above 1000C and acts as a lubricant. The friction coefficient of titanium increases slightly as temperature increases from 800 to 900C, probably owing to some peculiarities of the α-to-β-transformation. Increasing the temperature to 1200C increases the friction coefficient, probably because of decreasing specific pressure. Titanium scale does not soften in the temperature range investigated and hence does not act as a lubricant but rather increases the friction. The increase in the friction coefficient of molybdenum rolled in air, from about 0.35 at 1000C to 0.45 at 1200C, is probably caused by the increasing surface roughness associated with the increasing volatility of molybdenum oxides and the consequent surface cleanliness. The friction coefficient of niobium in air drops from 0.42 at 1000C at 0.37 at 1250C, owing to the action of the scale which, in this temperature range, spreads on the metal and forms a dense, smooth surface. The effect of the scale on the relationship of the rolling temperature and friction coefficient is confirmed by the data on rolling in vacuum or in argon (the latter corresponds roughly to a vacuum of 0.1 mm Hg). As atmospheric pressure decreases from 760 to 0.00001 mm Hg, the friction coefficient of titanium decreases, while those of iron, molybdenum, and

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L 12937-63

ACCESSION NR: AP3002391

niobium increase. The changing conditions of contact friction should thus be taken into account in developing the technology of the hot rolling of refractory metals in vacuum or an inert atmosphere. Orig. art. has: 3 figures and 2 formulas.

ASSOCIATION: none

SUBMITTED: 27Jul62 DATE ACQ: 12Jul63 ENCL: 00

SUB CODE: MA, ML NO REF SOV: 014 OTHER: 000

Card 3/3

L 10082-63 EWP(k)/EWP(q)/EWT(m)/BDS--AFFTC/ASD--Pf-4--JD/HM/HW/JG
ACCESSION NR: AP3000203 S/0136/63/000/005/0063/0067 66 65

AUTHOR: Pavlov, I. M.; Shelest, A. Ye.; Gurevich, Ya. B.; Orzhekhovskiy, V. L.; Bashchenko, A. P.

TITLE: Hot rolling of niobium in vacuum and in a protective atmosphere

SOURCE: Tsvetny*ye metally, no. 5, 1963, 63-67 18 27

TOPIC TAGS: niobium rolling, rolling in air, rolling in vacuum, rolling in argon, oxidation, sealing, surface hardness, spread, forward slip, friction, roll pressure

ABSTRACT: The effect of temperature and environment on the behavior of Nb in hot rolling has been studied. Specimens 10 x 10 x 150 mm of commercial grade Nb cut out of rolled plate were vacuum (approximately 10 sup -4 mm Hg) annealed at 1400C for 1 hr and rolled at 1000--1250C with a reduction of 20%. Several specimens were heated and rolled in vacuum (approximately 10 sup -5 mm Hg) or in argon, several were heated in vacuum (in ampules evacuated to 10 sup -2 mm Hg) and rolled in air, and several were heated and rolled in air. Heating in air caused

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APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000617420019-1"

L 10087-63
ACCESSION NR: AP3000203

intensive sealing and a sharp increase of surface hardness due to the absorption of active gases, especially oxygen. Nb held for 90 min in air at 1100C had a surface hardness of approximately 310 kg/mm sup 2 compared with an initial hardness of approximately 130 kg/mm sup 2. Heating in vacuum or in evacuated ampules under the same conditions increased the surface hardness only to approximately 140 or 160 kg/mm sup 2. Higher temperature and prolonged holding increased surface hardness and the depth of oxygen penetration. Spread, forward slip, specific friction, and the friction coefficient tend to decrease in rolling in air and are generally lower than in rolling in vacuum. Specific roll pressure and torque decrease with increasing temperature but are higher than in vacuum. In vacuum, spread tends to increase with increasing temperature, while forward slip remains constant. Rolling in argon occupies an intermediate position between vacuum and air rolling with regard to the effect on rolling parameters. Intensive oxidation of specimens heated in evacuated ampules occurred during rolling in air. It is therefore recommended to heat, roll, and cool niobium in vacuum. Orig. art. has: 7 figures.

Card 2/3

L 10087-63
ACCESSION NR: AP3000203

0

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 14Jun63 ENCL: 00

SUB CODE: 00 NO REF SOV: 008 OTHER: 001

Card 3/3 ph/GH

PAVLOV, I.M.; GUREVICH, ~~Ya.~~B.; SHELEST, A.Ye.; ORZHEKHOVSKIY, V.L.; BASHCHENKO, A.P.

Investigating certain conditions for the hot rolling of molybdenum, in vacuum, in an argon atmosphere, and in air. TSvet.met. 36 no.2:68-71 F '63. (MIRA 16:2)

(Molybdenum) (Rolling (Metalwork)) (Protective atmospheres)

PAVLOV, I.M.; SHELEST, A.Ye.; GUREVICH, Ya.B.; ORZHEKHOVSKIY, V.L.; BASHCHENKO, A.P.

Hot rolling of niobium in vacuum and in a protective atmosphere. TSvet. met. 36 no.5:63-67 My '63. (MIRA 16:10)

L 18939-65 EWT(m)/EWA(d)/T/EWP(t)/EWP(k)/EWP(b) Pf-4 ASD(m)-3 JD/EW

ACCESSION NR: AP4044137 S/0129/64/000/008/0034/0036

AUTHOR: Bashchenko, A. P.; Gurevich, Ya. B.

TITLE: Control of steel temperature and phase composition during thermomechanical treatment

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 8, 1964, 34-36

TOPIC TAGS: thermomechanical treatment, low temperature thermomechanical treatment, steel thermomechanical treatment

ABSTRACT: Temperature conditions and phase composition of steel during thermomechanical treatment, especially low temperature thermomechanical treatment have been studied at the Institute of Metal Science and the Physics of Metals. Two magnetometers were mounted on both sides of a "Duo-120" experimental mill to monitor the phase composition of the steel before and after each pass. The temperature of the specimen surface was measured by a thermocouple. In addition, pressure gages for measuring the roll pressure and a torque measuring

L 18939-65
ACCESSION NR: AP4044137

device were installed. It was found during the test that the thermocouple does not show the correct temperature of specimens because of the scale. Tests with thermocouples mounted inside specimens showed that the specimen temperature increases under the effect of plastic deformation. For instance, at an initial temperature of 375C, a 50% reduction in two passes raised specimen temperature by 40—60C, and the same reduction in one pass, by 2wC. At higher initial temperatures the effect is less pronounced. A 50% reduction in a single pass at an initial temperature of 830C raises the specimen temperature by only 15—20C. For maintaining isothermal conditions, small per-pass reductions are recommended. The second and subsequent passes have a greater effect owing to austenite work hardening in the first pass. Therefore, the reduction for each following pass should be gradually decreased. The preheating of rolls also helps in maintaining the isothermal conditions. Orig. art. has: 4 figures.

ASSOCIATION: TsNIIChM

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L 18939-65

ACCESSION NR: AP4044137

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, TD

NO REF SOV: 003 OTHER: 001

Card 3/3

L 51989-65 EWP(k)/EWA(c)/EWT(m)/T/EWP(b)/EWA(d)/EWP(t)/EWP(w) Pf-4 JD/HW
ACCESSION NR: AT5011203 UR/2717/64/000/008/0058/0066

AUTHOR: Bashcherkho, A. P.; Gurevich, Ya. B.; Zubko, A. M.

TITLE: Thermomechanical treatment of steel with austenite deformation in a rolling mill

SOURCE: Dnepropetrovsk. Institut metallovedeniya i fiziki metallov. Problemy metallovedeniya i fiziki metallov, no. 8, 1964, 58-66

TOPIC TAGS: thermomechanical treatment, rolling mill, steel, austenite, austenitic transformation, metal deformation, metal mechanical property

ABSTRACT: The influence of the degree of partial and total reduction of area on the mechanical properties of steel after tempering and annealing was investigated. Two temperature intervals were used, high temperature with deformation of stable austenite at 850-900°C and low temperature with deformation of precooled austenite in its zone of high stability at 525-550°C. The steels investigated had the following compositions in %: steel A - 0.31 C, 1.0 Si, 1.2 Mn, 1.95 Cr, 2.40 Ni, 0.025 S, 0.025 P, 1.25 W; steel B - 0.39 C, 1.02 Si,

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L 51989-65
ACCESSION NR: AT5011203

0.34 Mn, 1.61 Cr, 5.10 Ni, 0.010 S, 0.007 P; steel C - 0.45 C, 1.25 Si, 0.36 Mn, 1.98 Cr, 5.25 Ni, 0.016 S, 0.006 P; steel D - 0.43 C, 1.20 Si, 0.31 Mn, 1.60 Cr, 4.65 Ni, 0.005 S, 0.001 P. Samples for thermomechanical treatment were 15 mm thick, 7.5 mm wide, and 50-100 mm long. Deformation in one pass (partial deformation) was 12-40% and total deformation was 25-86%. After the last pass, the samples were cooled in water and liquid nitrogen to reduce residual austenite, and were then annealed (200°C, 1-2 hours). The following mechanical properties were determined: delta %, psi %, $sigma_s$ kg/mm², $sigma_b$ kg/mm², and S_k kg/mm². Impact resistance was measured on samples 4 x 8 x 55 mm with standard U-shaped notches 2 mm deep. Compared with ordinary hardening, thermomechanical treatment of steel with austenite deformation leads to increased strength and sometimes to decreased malleability and impact resistance. The effect depends on the temperature of the metal during deformation and on the partial and total reduction in area. Rolling with repeated deformation of precooled austenite should be applied to steels alloyed with elements which assure long term stability of the gamma phase. Partial transformation of austenite during rolling can lead to substantial lowering of ductility and to increase in brittleness. Use of steel

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L 51989-65
ACCESSION NR: AT5011203 2

melted in vacuum and free of gas and nonmetallic inclusions assures higher ductility and a lowered tendency toward brittle fracture. Orig. art. has: 8 figures and 5 tables.

ASSOCIATION: Institut metallovedeniya i fiziki metallov, Dnepropetrovsk (Institute of Physical Metallurgy and Physics of Metals)

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NR REF SOV: 002 OTHER: 000

Card 3/3

GUREVICH, Ye.

Mistress of a steel giant. Prof.-tekn. obr. [illegible]
[illegible]

GUREVICH, Ya.B.; BASHCHENKO, A.P.

Measuring metal surface temperature during rolling. Izm. tekh. no.11:37-38 N '64. (MIRA 18:3)

L 21205-65 EWT(d)/EPA(s)-2/EWT(m)/EWP(w)/EPF(c)/EWA(d)/EWP(v)/T/EWP(t)/ EWP(k)/EWP(h)/EPA(bb)-2/EWP(b)/EWP(1) Pf-4/Pr-4/Pt-10 IJP(c)/ASD(m)-3/
ACCESSION NR: AP5000943 AS(mp)-2 JD/HW/DJ S/0136/64/000/012/0067/0071

B

AUTHOR: Gurevich, Ya. B., Orzhekhovskiy, V. L.

TITLE: Friction during hot rolling of metals

SOURCE: Tsvetnyye metally, no. 12, 1964, 67-71

TOPIC TAGS: rolling friction, hot rolling, vacuum rolling, homogenizing, refractory metal, vacuum working, surface film, surface finish, oxide film

ABSTRACT: Experiments were carried out on a vacuum rolling mill to determine the effect of rolling on external friction. Rolling was done in a vacuum of 10^{-5} mm Hg or in an argon atmosphere. Before rolling, the metals (Fe, Ni, Ti, electrical steel, Mo, Nb) were homogenized and the surface machined. The coefficient of friction was determined during forward rolling in the 1000-1200C temperature range with a change in atmospheric conditions (medium) of heating and rolling. It was found that on changing from hot rolling in a vacuum, where oxidation was virtually absent, to the ordinary hot deformation conditions in air, there was a 1.5-2.0 fold decrease in the coefficient of friction for Fe, Ni, Mo, Nb and a 1.5 fold increase for Ti and electrical steel. The boundary conditions at the contact surface played a vital part in external friction and therefore, when examining

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L 21205-65
ACCESSION NR: AP5000943

the quantitative and qualitative aspects of friction, the thickness of the oxide films, the temperature, and the medium were taken into account. Generally, thin surface films, scale, lubricants, or the processed metal itself, lowered the coefficient of friction by reducing adhesion in the contact zone and by preventing seizing. The oxide MoO_3, formed on heating molybdenum, has a melting point of 795C and acted as a natural lubricant, lowering the coefficient of friction. However, as the temperature increased from 1000 to 1200C, the effectiveness of the lubricating action decreased owing to increasing volatility of the oxide. The melting point of the oxides of all other investigated metals exceeded the maximal rolling temperature and reduced the adhesion force by shielding the metal surface against direct contact with the rolls. In this case, unlike hot rolling in a vacuum, shearing occurred in the scale (oxide) layer. Since the shear strength for Fe, Ni, and Nb in the scale layer was less than in the base metal, this scale acted as a solid lubricant, lowering the coefficient of friction. The opposite relation was found for electrical steel and Ti, probably due to the opposite effect of the oxides on the coefficient of friction. Seizing and adhesion of metals depended on the nature and temperature of the metals, loads, and cleanliness of the surface. Molybdenum

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L 21205-65
ACCESSION NR: AP5000943

demonstrated the greatest tendency to adhere to steel rolls after 60-70% reduction when rolling in a vacuum, which was due to smoothing of the molybdenum strip and increased surface contact with the roll. This friction can be avoided by selecting the proper material for the rolls or by using lubricants. Orig. art has: 2 tables and 1 figure.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: IE, MM

NO REF SOV: 009 OTHER: 001

Card 3/3

L 43073-65 EWT(m)/EPF(c)-2/EWG(m)/EWA(d)/EWP(t)/EWP(k)/EWP(b)/EWA(c) JD/

ACCESSION NR: AP5017607 UR/0136/65/000/007/0076/0081
669.28/29:621.771.2

AUTHOR: Gurevich, Ya. B.; Bashchenko, A. P.; Orzhekhovskiy, V. L.

TITLE: Features of the hot rolling of high-melting metals in a vacuum as well as in an inert gas atmosphere

SOURCE: Tsvetnyye metally, no. 7, 1965, 76-81

TOPIC TAGS: hot rolling, vacuum atmosphere, argon atmosphere, hot rolled titanium, hot rolled niobium, hot rolled molybdenum, hot rolled chromium, pure metal

ABSTRACT: The advantages and disadvantages of the hot rolling of commercially pure (content of impurities: not more than 0.1%) Ti, Mo, Nb, and Cr in a vacuum of $\sim 10^{-5}$ mm Hg are compared with their hot rolling in air and in an inert gas atmosphere (argon, containing 0.01% N_2 and 0.005% O_2). The experiments were performed in a specially designed setup, the hot rolling of the specimens being carried out at the rate of ~ 0.1 m/sec. The gas content, structure, and mechanical properties of the specimens were investigated. It was found that in specimens hot-rolled in the vacuum the gas content was even lower than in the billets, whereas in specimens hot-rolled in argon it was the same as in the billets and in specimens hot-rolled in the air the gas content increased as much as 200% and more depending on the kind of metal. Thus, niobium is particularly prone to rapid saturation with gases: its

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L 53778-65

ACCESSION NR: AP5017607

heating in a vacuum of ~ 10^{-2} mm Hg and rolling in air lead to its marked oxidation. In molybdenum, on the other hand, gas content remained the same level as the initial (10-20 cm^3/g) in all cases (vacuum, argon, air). This is attributable to the extremely high volatility of molybdenum oxides, which led to the presence of surface effects only. Metallographic examinations of the metals revealed enlargement in grain size following hot rolling in a vacuum as compared with hot rolling in air. A comparison of the conditions and effect of hot rolling indicates that the best method is deformation in a deep vacuum (~10^{-5} mm Hg) for such metals as Ti, Nb, and Cr. The hot rolling of these metals in a vacuum, as compared with their rolling in air or in argon, ensures: preservation of purity of the raw material or even some further enhancement in its purity; higher technological deformability; lower expenditures of power and energy and hence greater durability of work parts; improved combination of the properties of strength and plasticity of subsequent cold or warm rolling; satisfactory surface of rolled metal, i.e. elimination of such labor-consuming and economically inexpedient operations as cleaning or pickling. For molybdenum an atmosphere of technically pure inert gas or a comparatively shallow vacuum (~10^{-2} mm Hg) is permissible. Orig. art. has: 6 figures, 3 tables.

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ACCESSION NR: AP5017607

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: NM

NR REF SOV: 011 OTHER: 000

Card 3/3

BASHCHENKO, A.P.; GUREVICH, Ya.B.; ZUBKO, A.M.

Thermomechanical treatment of steel with austenite deformation in rolling mills. Probl. metalloved. i fiz. met. no.8:58-66 '64.
(MIRA 18:7)

GUREVICH, Ya.B.

Soviet postage stamps in 1964. Zem.i vsel. 1 no.2:90-91 Mr-Ap '65.
(MIRA 18:8)

L 2971-66 EWT(m)/EWP(w)/EPF(c)/ETC/EPF(n)-2/EWG(m)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) IJP(c) JD/HW/JG

ACCESSION NR: AP5021500 UR/0370/65/000/004/0137/0143
669.018.29 75 68 B

AUTHOR: Gurevich, Ya. B. (Moscow); Orzhekhovskiy, V. L. (Moscow) 44,55 44,55

TITLE: Effect of the conditions of hot plastic deformation on the structure and properties of molybdenum, niobium, and titanium 18

SOURCE: AN SSSR. Izvestiya. Metally, no. 4, 1965, 137-143 27 27 27

TOPIC TAGS: molybdenum, niobium, titanium, metal plastic deformation, metal hot rolling, metal structure, metal mechanical property, vacuum rolling, inert gas rolling, air rolling 18

ABSTRACT: An investigation has been made of the gas content, structure, and mechanical properties of vacuum-arc melted molybdenum, niobium, and titanium, hot rolled with a total reduction of 50% in air, argon, or a vacuum of $5 \cdot 10^{-5}$ mm Hg at temperatures up to 800—1200C. Hot rolling in air appreciably increased the gas content in titanium and niobium, especially at 800—1200C. The greatest increase was in the oxygen 27 content; the increases in nitrogen and hydrogen were somewhat smaller. No noticeable increase in the gas content was observed in molybdenum rolled at 1000—1200C, although there was intense oxidation of the metal. No noticeable gas absorption occurred

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L 2971-66

ACCESSION NR: AP5021500 7

during heating and rolling in vacuum. Heating and rolling of titanium and niobium in an argon atmosphere, as well as heating in vacuum with subsequent rolling in air, resulted in gas absorption to a degree intermediate between those produced with hot rolling in vacuum and in air. Niobium and titanium hot rolled in vacuum were satisfactorily cold rolled at room temperature. However, in niobium and titanium hot rolled in air, a more or less satisfactory plasticity in cold rolling was achieved only after the removal of the surface gas-saturated layer, which was about 1 mm thick. An additional hot rolling in vacuum or in air at 1200C (niobium and molybdenum) or at 1100C (titanium) with a total reduction of 80% resulted in some fragmentation of the α'-phase of titanium. The recrystallized structure of molybdenum and niobium with almost equiaxial grains became fibrous, with the grains elongated in the direction of rolling. Niobium and titanium hot rolled in vacuum had lower tensile and yield strengths and higher ductility than after rolling in air. The metals rolled in air failed in a brittle manner; those rolled in vacuum had a ductile fracture. 18 Rolling in vacuum or in air produced no significant difference in the mechanical properties of molybdenum. Orig. art. has: 5 figures and 3 tables. [MS]

Refractory Metals 27,44,55

ASSOCIATION: none

SUBMITTED: 10Nov64 ENCL: 00 SUB CODE: MM, AS

NO REF SOV: 007 OTHER: 001 ATD PRESS: 4109

Card 2/2 BVK

[illegible]

(KLRA 18:8)

L 31139-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t) IJP(c) JD

ACC NR: AP6012234 SOURCE CODE: UR/0129/66/000/004/0019/0021

AUTHOR: Bashchenko, A. P.; Gurevich, Ya. B.; Kogan, L. I.; Teymer, D. A.; Entin, R. I.

ORG: TsNIIChERMET

24
23
B

TITLE: Investigation of steels susceptible to secondary hardening and strengthened by thermomechanical treatment

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 4, 1966, 19-21

TOPIC TAGS: steel treatment, thermomechanical treatment, low temperature treatment, high temperature treatment /45Kh5M3F, 42Kh2N2VFS, 44Kh5MVFS, 60Kh5MVFS

ABSTRACT: The effect of thermomechanical treatment on the properties of 45Kh5M3F, 42Kh2N2VFS, 44Kh5MVFS, and 60Kh5MVFS structural steels susceptible to secondary hardening has been investigated. Low temperature thermomechanical treatment (austenitizing at 1050—1100C for 15—20 min, cooling to 550C, plastic deformation with 75% reduction, water quenching followed by refrigeration in liquid nitrogen and tempering) improved the strength of all steels tested. For instance, at 330C the tensile strength was 230—266 kg/mm^2, the yield strength 233—260 kg/mm^2, the elongation 3%, and the reduction of area 15—30%. Corresponding figures for 480C were 204—246 kg/mm^2, 194—236 kg/mm^2, 3—4%, and 18—38%. However, 42Kh2N2VFS and 60Kh5MVFS steels in the as-hardened or low-tempered condition were brittle at room temperature. The yield strength can be increased to about 200 kg/mm^2 at 500C and about 250 kg/mm^2

Card 1/2 UDC: 539.374:621.785

GOLYAKOV, Petr Antonovich; GUREVICH, Ya.D.; KOZYREV, S.M.

[Handbook for setting up work norms in well drilling and petroleum production] Spravochnik normirovshchika v burenii skvazhin i dobyche nefti. [2. izd.] Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1955. 186 p. (MLRA 8:11)

(Petroleum industry) (Wages)

GRINGOL'TS, L.A.; KOZYREV, S.M.; SIROTTA, B.L.; FILINA, M.D.; YURKEVICH, V.S.; GUREVICH, Ya.D., redaktor; BEKMAN, Yu.K., vedushchiy redaktor; [redacted] A.S., tekhnicheskiy redaktor

[Manual of wages in the petroleum industry] Spravochnik po zarabotnoi plate v neftianoi promyshlennosti. Izd. 2-oe, perer. i dop. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1956. 342 p. (MIRA 9:10)
(Wages) (Petroleum industry)

GUREVICH, Ya.D.

Tatar A.S.S.R. is the largest petroleum region. Neftianik 2 no.11:15-18 N '57. (MIRA 10:10)
(Tatar A.S.S.R.--Petroleum industry)

PONOMAREV, Konstantin Petrovich, laureat Stalinskoy premii; SHTEYNER, Samuil Iovelevich; GAL'PERSON, Ye.B., red.; GUREVICH, Ya.D., ved.red.; POLOSINA, A.S., tekhn.red.

[History of the petroleum industry in the Kuban] Ocherki istorii neftianoi promyshlennosti Kubani. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 97 p. (MIRA 12:1)
(Kuban--Petroleum industry)

TROSHIN, A.K.,; GUREVICH, Ya.D., ved. red.; TROFIMOV, A.V., tekhn. red.

[History of petroleum technology in Russia from the 17th century to the second half of the 19th century] Istoriia neftianoi tekhniki v Rossii (XVII v.-vtoraia polovina XIX v.). Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 112 p. (MIRA 11:11)

(Petroleum industry)

MAL'KOV, Ivan Aleksandrovich; SHATSOV, N.I., red.; GUREVICH, YA.D., vedushchiy red.; MUKHINA, E.A., tekhn.red.

[Theory and practice of the use of bits for hydraulic mining in the U.S.A.; based on materials published abroad] Teoriia i praktika primeneniia gidromonitornykh dolot v SShA; po materialam zarubezhnoi pechati. Moskva, Gos. nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 135 p. (MIRA 12:1)
(Hydraulic mining--Equipment and supplies)

FOMENKO, Fedor Nikitich; GRIGORYAN, N.G., red.; GUREVICH, Ya.D., vedushchiy red.; POLOSINA, A.S., tekhn.red.

[Electric drills for drilling oil and gas wells] Elektrobury dlia bureniia neftianykh i gazovykh skvazhin. Moskva, Gos. nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 241 p.
(Boring machinery) (MIRA 12:2)

GUREVICH, Ye.D.; SMIRNOV, A.S.; LIVSHITS, Z.I.; LOSEV, M.T.; BALANOVSKIY, S.A.; UDYANSKIY, N.Ya.; MURAV'YEV, V.M.; AMIYAN, V.A.; LOZOACHEV, P.M.; OFROSIMOV, V.S.; POPOV, S.S.; MATSKIN, L.A.; RATUSH, P.P.; PARFENOV, Ye.I.; DUBROVINA, N.D., vedushchiy red.; MUKHINA, E.A., tekhn.red.

[Soviet petroleum industry] Neftianaia promyshlennost' SSSR. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 330 p. (MIRA 11:3)
(Petroleum industry)

SAAKOV, Mikhail Artem'yevich; GUREVICH, Ya.D., red.; LATUKHINA, Ye.I., vedushchiy red.; FEDOTOVA, I.G., tekhn. red.

[Wages in the enterprises of the petroleum and gas industries] Oplata truda na predpriiatiiakh neftianoi i gazovoi promyshlennosti; osnovnye usloviia. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1961. 178 p. (MIRA 14:11)
(Wages—Petroleum industry)
(Wages—Gas industry)

GUREVICH, Ya.I., assistent.

Problem of a rational law of modifications in the cross section of statically indeterminate rod systems. Trudy Khab.IIT no.7:158-177 '54. (MLRA 8:1)

(Girders) (Structures, Theory of)

AUTHOR: Gurevich, Ya.L., Engineer. 122-1-12/34

TITLE: On chip contraction (Ob usadke struzhki)

PERIODICAL: "Vestnik Mashinostroyeniya" (Engineering Journal), 1957, No.1, pp. 43 - 44 (U.S.S.R.)

ABSTRACT: Instead of a contraction, an elongation was discovered in machining an 11.5% Si content silicon-aluminium alloy at 375 m/min cutting speed. This was also found to be the case for a titanium alloy of 110 kg/mm^2 tensile strength at a cutting speed of 30 m/min.

There are 2 graphs.

AVAILABLE: Library of Congress.

GUREVICH, YA.L.

PHASE I BOOK EXPLOITATION SOV/3791

Soveshchaniye po obrabotke zharoprochnykh splavov, Moscow, 1957.

Obrabotka zharoprochnykh splavov; [sbornik dokladov...] (Treatment of Heat-Resistant Alloys; Collection of Papers Read at the Conference), Moscow, Izd-vo AN SSSR, 1960. 231 p. 3,500 copies printed.

Sponsoring Agencies: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya; Akademiya nauk SSSR. Institut metallurgii im. A.A. Baykova. Nauchnyy sovet po problemam zharoprochnykh splavov.

Resp. Ed.: V.I. Dikushin, Academician; Ed. of Publishing House: V.A. Kotov; Tech. Ed.: V.V. Bruzgul'.

PURPOSE: This book is intended for metallurgists.

COVERAGE: The book consists of thirty papers read at the Conference on the Treatment of Heat-Resistant Alloys held in Moscow by the Committee on Machine-Building Technology, Institute of the Science of Machines, Academy of Sciences USSR, in 1957. The papers deal with four principal areas of alloy metallurgy: casting, forming, machining, and welding. The alloys (together with refractory carbides, borides, nitrides, and oxides) are discussed especially in connection with their application in the manufacture of turbine blades, heat engines, boilers, reactors, containers for high-temperature media, dies, casting molds, and metal-cutting tools. No personalities are mentioned. Some of the articles are accompanied by references, mainly Soviet.

DANIYELYAN, Arutyum Mkrtichevich, zasl. deyatel' nauki i tekhniki RSFSR, doktor tekhn. nauk, prof.[deceased]; BOBRIK, Petr Ivanovich; GUREVICH, Yankel' Leybovich; YEGOROV, Ivan Sergeyevich; VASIL'YEV, D.T., kand. tekhn.nauk, retsenzent

[Machining heat resistant steels and alloys and high melting metals] Obrabotka rezaniem zharoprochnykh stalei, splavov i tugoplavkikh metallov. Moskva, Mashinostroenie, 1965. 306 p. (MIRA 18:5)

L 3513-66 EWT(m)/EWA(d)/EWP(t)/EWP(k)/EWP(z)/EWP(b) IJP(c) JD/JG

AM5019283 BOOK EXPLOITATION UR/

UDK621.90:669.14.018.44

Daniyelyan, Arutyum Mkrtichevich (Doctor of Technical Sciences; Professor); Bobrik, Petr Ivanovich; Gurevich, YAnkel' Leybovich; YEgorov, Ivan Sergeyevich

Machining heat-resistant steel, alloys and refractory metals (Obrabotka rezaniyem zharoprochnykh staley, splavov i tugoplavkikh metallov) Moscow, Izd-vo "Mashinostroyeniye", 1965. 306 p. illus., biblio. Errata slip inserted. 5700 copies printed.

TOPIC TAGS: machining, heat resistant steel machining, refractory metal machining, heat resistant alloy machining, titanium alloy machining, beryllium machining, rare metal machining

PURPOSE AND COVERAGE: This book is intended for engineering personnel of machine-building plants, scientific research institutes, and engineering design bureaus. It may also be useful to students of schools of higher technical education specializing in technology. The book reviews specific technological features and aspects of various procedures of machining heat-resistant and refractory metals

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and alloys. In particular, it deals with metal turning, milling, boring, threading, and broaching. Suggestions are made on the selection of materials used for contact surfaces of tools, tool shapes, and efficient machining conditions. It also presents an analysis of thermal phenomena observed in the process of machining.

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SUB CODE: MM SUBMITTED: 17Mar65 NO REF SOV: 105

OTHER: 35

Card 4/4

The sedimentation of earthy pigments. Ya. M. Gurevich. *Lakokrasochnaya Industriya* 1934, No. 3, 31-9. Such pigments as ocher, minium and umber form unstable, easily coagulating H_2O suspensions when gypsum is present. Addn. of a little Na_2SiO_3 prevents coagulation and permits slow sedimentation. The first portion, which settles out rapidly, is of little value for paints. As the grain size decreases in later fractions, the Fe_2O_3 content increases, the properties improve and the color becomes lighter.

H. M. Leicester

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SHAPIRO, I.S.; RISKIN, I.V.; GUREVICH, Ya.M.

[Technology of mineral pigments] Tekhnologiia mineral'nykh pigmentov. Pod red. IA.M.Gurevich. Leningrad, Red.khim.lit-ry, 1939. 271 p. (MLRA 7:2)
(Pigments)

1ST AND 2ND GROUPS

PROCESSES AND PROPERTIES INDEX

Ch

1 **Mono- and poly-dispersed pigments.** ~~Ya. M. Gurevich~~
and M. T. Berezhinskaya. *Byull. Obmena Opyt. Laku-*
krasochnoi Prom. **1939**, No. 4, 13-14.—The dependence of
properties of pigments on the degree of dispersion and
homogeneity of their particle size was studied. Cr_2O_3,
ultramarine and red iron oxide were fractionated into frac-
tions of narrow particle-size ranges. The following prop-
erties of monodispersed fractions were detd.: (*a*) specific
volumes of ppts., freely settling from dild. stable and co-
agulated suspensions; (*b*) min. quantities of various liquids
necessary to convert a powder into a paste; (*c*) viscosities
of pastes of paint consistency; (*d*) colors. In polydis-
persed mixts. only viscosities and min. quantities of liquids
to form pastes were detd. Whether mono- or poly-dis-
persed red iron oxide increases oil take-up with decrease in
particle size, the reverse is true of ultramarine and Cr_2O_3.
Oil take-up in polydispersed mixts. is additive for red iron
oxide and is not additive for ultramarine and Cr_2O_3. The
greater the dispersion the greater is the coeff. of refraction
and brilliance of the color. David Aelony

ASO-SLA METALLURGICAL LITERATURE CLASSIFICATION

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Conditions of precipitation and filtration of aqueous suspensions of pigments. Ya. M. Gurevich, R. P. Spektorova and N. L. Boldova. ~~Byull. Obmen~~ Opyt. *Lakokrasochnoi Prom.* **1939**, No. 4, 17-18. The following findings are reported. Stable suspensions settle according to Stokes' law. The greater the stability of the suspension, the less is the decrease in specific vol. on coagulation. An increase in the rate of coagulation is followed by an increase in filtration rates, by an increase of the specific vol. of the sediment, by an increase in the rate of settling of dild. suspensions, by a decrease in the rate of settling of thickened suspensions. The nature of ions sorbed by the pigments dets. whether their suspensions in distd. water will be stable or coagulated. The nature and concn. of electrolytes also dets. whether coagulation is temporary or permanent. The filtered ppt. has a definite structure and density depending on the degree of coagulation. When temporarily coagulated ppts. are washed the rate of filtration decreases and its structure and density are changed when the bulk of electrolyte is washed out. When a mixt. of electrolytes is used the coagulation is less than that calcd. from the sum of actions of individual electrolytes. David Aelony

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

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Effect of the granulometric composition of powders on their liquid-binding capacity. I. Ya. M. Gutevich and M. T. Bereshinskaya. *Colloid J.* (U. S. S. R.) 5, 807-16 (1939).—Powders of ultramarine (I), chromic oxide (II) and an iron oxide contg. red lead (III) were sepd. in fractions having diams., *d*, between 20 and 10, 10 and 5, 5 and 2, and 2 and 1 μ. The sedimentation vol. of I and II in water and linseed oil increases with *d*, and that of III in H_2O and linseed oil and of I, II and III in xylene diminishes when *d* rises. The amt. of water, linseed oil or xylene necessary to produce a paste rises with *d* for I and II and falls for III. The viscosity of pastes of I and II in linseed oil increases, and that of III in linseed oil and of I, II and III in mineral oil decreases, with rising *d*. The systems giving unstable suspensions show a liquid-binding capacity which increases with dispersity, and other systems show an opposite behavior. II. *Ibid.* 823-9.—Mixts. in various proportions of large and small particles of I, II and III were prepd. Their capacity to bind linseed oil was additive for III and nonadditive for I and II.

J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

26

Dispersion analysis of pigments by use of the ordinary laboratory centrifuge. Ya. M. Gurevich. *Byull. Obmen Opyt. Lakokrasochnoi Prom.* 1940, No. 3, 16-18. With centrifugal force to produce sedimentation, Stokes' formula can be used if g is substituted by the product of the square of the angular velocity of the centrifuge by the distance of the settling particle from the center of the centrifuge. If angular velocity of the centrifuge is W and the distance of the center of centrifuge to the particle is X, Stokes' formula becomes $V = 2(D - d)W^2Xr^2/9$. V calcd. from this formula would be correct only for the moment centrifuging begins; therefore the following differential equation is proposed. $dx/dt = 2(D - d)W^2Xr^2/9$. Integration between the limits of X_1 to X_2 and from t to 0 and solving for t gives $t = (9 \ln X_2/X_1)/2(D - d)W^2r^2$. Centrifuging is repeated several times. Samples are taken out after each centrifuging and the amts. of powder are detd. in each sample. An important source of error is the heating of the centrifuge, which lowers viscosity; this can be avoided by cooling with a cold-water coil. This method is applicable only to particles of less than 2 μ in diam. With a centrifuge at 4000 r.p.m., particles of as low as 0.1 μ can be analyzed.

David Arbuy

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

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Dependence of the atmospheric stability of paints on the lyosorption of the pigments from which they are made. Ya. M. Gurevich and M. T. Berezhinskaya. *Byull. Obmena Opyt. Lakokrasochnoi Prom.* 1940, No. 6, 12-15.—In a previous article (*C. A.* 34, 2074[9]) the authors established that some powders show a greater sorptive capacity for liquids with decrease in particle size of the powder, while other powders exhibit the opposite phenomenon. The simplest and the most probable explanation of this phenomenon is that various powders possess different abilities to hold on their surface liquid envelopes of greater or lesser thickness. This property of powders the authors call "lyosorption." It was the authors' contention that pigment and fillers possessed of greater lyosorption would exhibit greater atm. stability. They investigated TiO_2, white lead, heavy spar, chalk and talc. It was established that white lead and talc have high lyosorption, while TiO_2, heavy spar and chalk have low lyosorption. Stable suspensions of all these pigments were obtained in mixts. of linseed oil mixed with polymerized oil. The authors' hypothesis proved to be true for the pigments tested.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

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Methods of preparation of stable suspensions suitable for dispersion analysis. Yu. M. Gurevich. *Byull. Obmena Opyt. Lakokrasochnoi Prom.* **1940**, No. 7-8, 21-4.—The stability of pigment suspensions depends greatly upon the nature of adsorbed ions. Ultramarine pigment forms unstable suspensions upon treatment with multivalent metal salt solns., but upon washing with Na salts, especialy Na_2SO_4, stable suspensions are obtained. Unfinished lithopone forms stable suspensions in presence of excess $ZnSO_4$, or upon washing with $ZnSO_4$. Finished lithopone requires addn. of small amts. of water glass, after the above treatment, to form stable suspensions. TiO_2 forms fairly stable suspensions in hydroxyethylcellulose solns. This pigment forms semistable suspensions upon treatment with Na_2SO_4 and addns. of small amts. of KOH. Lead white does not yield stable suspensions. The best results were obtained with pigments which retain very small amts. of sol. acetates. Complete absence of the latter results in unstable suspensions. G. M. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

26

Oil paints, enamels, and nitro lacquers. V. M. Vagramyan-Gurevich. U S S R 64,490, April 30, 1945. A pigment [illegible] and a bonding substance are mixed in proportions necessary to give a free-flowing powder. The mixt. is compressed under 10-300 kg. per sq. cm. and the cake is again mixed in a paint mill or mixer with an addnl. quantity of the bonding substance to give a paint of the usual consistency. M. Hosch

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

[illegible]

APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000617420019-1"

GUREVICH, Ya. M. (Eng.) Cand. Chem. Sci.

Dissertation: "Oil Capacity of Pigment Pastes." Moscow Order of Lenin Chemicotechnological Inst imeni D. I. Mendeleyev, 31 Oct 47.

SO: Vechernyaya Moskva, Oct, 1947 (Project #17836)

CA

26

Effect of polymerized oils and alkyd resins on the aggregation and dispersion processes of pigment suspensions in organic solvents. Ya. M. Gurevich. *Kolloid. Zhur.* 14, 93-7(1952).—Suspensions of inorg. pigments (ZnO, TiO$_2$, etc.) mixed with oxidized linseed oil in gasoline (I) were less stable and in gasoline 4, butanol (II) 1, and COMe$_2$ more stable than suspensions of dry pigments. This was due to soly. of oil being smaller in I than in the other solvents. Three linseed oils differing by viscosity and treatment behaved similarly. Suspensions of ZnO mixed with an alkyd resin (III) were stable in I + II mixts. contg. 20-40% II at all temps., while in 60% II above 50°, and in pure II stable above 30° only, in 80% II above which III was fully miscible above 65°. The temp. above which III was fully miscible with the solvent also increased from 20% II to pure II.
J. J. Bikerman